



HELIOPHYSICS EXPLORERS PROGRAM 2019 MEDIUM-CLASS EXPLORER (MIDEX)

PHASE A CONCEPT STUDY QUESTIONS & ANSWERS

Updated

~~November 30, 2020~~

~~December 14, 2020~~

~~February 17, 2021~~

~~March 17, 2021~~

~~April 6, 2021~~

~~April 20, 2021~~

~~May 5, 2021~~

~~May 10, 2021~~

~~May 20, 2021~~

June 8, 2021

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Please submit your Questions to Dr. Moses, Mr. Florance, and Dr. Wu by email at:

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We will work to develop Answers your Questions, and post those Answers to this document. Please check back for the latest version, as you may not be notified that your Question has been answered.

Q&As 1, 2, and 3 posted November 30, 2020.

Q&As 4, 5, 6, 7, 8, 9, 10, and 11 posted December 14, 2020.

Q&A 12 posted February 17, 2021.

Q&A 12 amended, and Q&As 13 and 14 posted March 17, 2021.

Q&A 9 superseded by Q&A 17, and Q&As 15, 16, 17, and 18 posted April 6, 2021.

Q&A 18 amended on April 20, 2021.

Q&A 16 amended on May 5, 2021.

Q&A 11 amended on May 10, 2021.

Q&A 19 posted on May 20, 2021.

Q&A 19 amended, and Q&A 20 posted on June 8, 2021.

Additions are in bold text and deletions are struck through in amendments.

Q1: Will NASA consider shifting the AO LRD (NLT February 2026) to ensure that all missions have sufficient time to make a baseline launch date after absorbing delays from COVID-19 and other factors?

A1: To accommodate delays from COVID-19 and other factors, the AO LRD is extended to NLT October 2026, and the second LRD is extended to NLT December 2028.

Q2: Does the new evaluation Factor C-7, Ground systems, include science ground-based observatories or only operations?

A2: The new evaluation Factor C-7, Ground systems, is created for TMC evaluation of the CSR as defined in the *MIDEX Guidelines and Criteria for the Phase A Concept Study* document. A science ground-based observatory should be treated as a science instrument, and described appropriately in Section E, Science Implementation, of the CSR.

Q3: For the later Launch Readiness Date (LRD), should the 2 year interim period be considered an extended Phase A or an extended Phase B? Is the cost cap for the later LRD higher than the \$250M FY2019 provided in the AO?

A3: Requirement CS-112 of the *MIDEX Guidelines and Criteria for the Phase A Concept Study* document states that the 2 year delay in the LRD is assumed to be “an extended Phase B.” Additional cost impacts due to the later LRD are outside the AO cost cap, but must be justified in the CSR.

Q4: Should the Concept Study Report present detailed Design Reference Missions for both the revised AO Launch Readiness Date (LRD) of NLT October 2026, as well as the second, later LRD of NLT December 2028?

A4: The Concept Study Report should present a detailed Design Reference Mission for the preferred LRD. In addition, Requirement CS-113 of the *MIDEX Guidelines and Criteria for the Phase A Concept Study* document states that the proposer, “shall describe the impact of both LRDs.” Furthermore, “[p]roposers are encouraged to make the assumptions needed to minimize the impact to the mission should the non-preferred launch date be chosen by NASA; such assumptions should be noted in the discussion.”

Q5: If the use of NASA-provided communication or navigation services is proposed, is a Letter of Commitment required in all cases, or just in cases in which the mission requires capabilities beyond what is described in the SCan MOCS document?

A5: Requirement CS-79 of the *MIDEX Guidelines and Criteria for the Phase A Concept Study* document states that, "If the use of NASA-provided communication or navigation services is proposed, this appendix shall include an associated letter of commitment."

Q6: The Mission Operations and Communication Services document in the Program Library states that, "NASA missions that use standard services will not be charged by SCan for recurring cost for aperture or per-minute fees." Should these costs be included in the mission cost calculations and the CSR for evaluation?

A6: Requirement 32 of the MIDEX Announcement of Opportunity states that, "If use of NASA's network services is proposed, costs for services, as described in the *NASA's Mission Operations and Communications Services* document, including the cost of any development but excluding DSN Aperture Fees, shall be included in the PI-Managed Mission Cost and the proposal's cost plan. Cost estimates for DSN Aperture Fees shall be included in the proposal but not in any cost table."

Q7: Does Requirement CS-30 of the *Guidelines and Criteria for the Phase A Concept Study* document provided in the Program Library apply to missions in a highly elliptical Earth orbit such as a lunar resonant (TESS-like) orbit?

A7: No; Requirement CS-30 of the *MIDEX Guidelines and Criteria for the Phase A Concept Study* document only applies "for missions whose Phase E operations are beyond Earth orbit."

Q8: What is a sufficient level of detail that should be provided to facilitate cost assessment of elements in the Master Equipment List (MEL)?

A8: As described in Requirements 68, B-64, and B-65 of the MIDEX AO, and Requirement CS-113 of the *MIDEX Guidelines and Criteria for the Phase A Concept Study* document, all spacecraft system element components and individual instrument element components in the MEL shall be summarized to support validation of proposed mass estimates, power estimates, contingencies, design heritage, and cost. Where necessary, details of these components in the

MEL should be provided at a level of detail comparable to that of the electronic boards described in the paragraphs following Requirement CS-113.

If the Evaluation Panel assesses that the level of detail is not sufficient, this will be communicated before the Site Visit, and the Concept Study Team will be given an opportunity to respond. Please note that the time available for this post-CSR submission communication is restricted, so a thorough and complete MEL should be provided with the CSR.

~~**Q9:** Does Appendix L.20, Space Systems Protection, of the *MIDEX Guidelines and Criteria for the Phase A Concept Study* document apply to spacecraft possessing only a minimal propulsion system capability?~~

~~**A9:** Yes; the February 1, 2019 guidance from the NASA Associate Administrator directs that all newly started or newly solicited robotic spacecraft protect their command uplink through the use of encryption that is compliant with Level 1 of the Federal Information Processing Standard (FIPS) 140-2. This requirement does not apply, however for (1) hosted instrument payloads; (2) Class C or D spacecraft lacking propulsion subsystems; and (3) spacecraft that will operate more than two million kilometers (“deep space”) from the Earth. This guidance therefore applies to any Class C or D spacecraft with any propulsion subsystem capability.~~

[Q&A 9 superseded by Q&A 17 on April 6, 2021]

Q10: Should CSRs containing export-controlled material (ITAR or EAR) be submitted with the export-controlled material redacted?

A10: In accordance with the AO Section 5.8.3 and Requirement CS-6, complete CSRs with any export-controlled material (ITAR or EAR) redacted should be submitted, in addition to separate, redacted versions of any files with the export-controlled material marked appropriately.

At the proposer’s discretion, a second unredacted CSR that includes any export-controlled material may be submitted. The CSR must be clearly labeled as containing export-controlled material, a table of export-controlled material locations in the CSR provided, and the export-controlled material contained therein must also be clearly marked.

Q11: Does every named person in the CSR requires a personal letter of commitment, excluding collaborators, or just major or critical participants?

A11: In accordance with the AO Section 5.8.1 and Requirement CS-79, letters of commitment are required from all: (i) organizations offering contributions of goods and/or services (collaborators excepted); (ii) major or critical participants in the mission; and (iii) Proposal Team members. Per AO Section 5.8.2, “The Proposal Team is defined to include, but not be limited to, all named Key Management Team members, all Co-Is, and all collaborators.” All individuals listed as Proposal Team members are expected to have a significant and unique role in the investigation. **For item (iii) above, an email sent from the individual Proposal Team member to the PI stating the member’s commitment will be sufficient to satisfy the signature requirement in Requirement CS-79. [Amended May 10, 2021]**

Q12: The CSR Guidelines does not specify the exact incentive provided for Technology Demonstration Opportunities (TDOs). Can you provide the exact dollar amount of the incentive?

A12: The incentive value for each TDO is capped at \$5M FY19, and as stated in the AO, costs up to the incentive value of TDO(s) will not count against the PI-Managed Mission Cost (PIMMC) and will be ~~added to the Adjusted AO Cost Cap~~ to be included in the Enhanced PIMMC, up to \$5M FY19 per TDO. **[Amended March 17, 2021]**

Q13: The Heliophysics 2019 MIDEX AO says, “Estimated NASA Center Management and Operations (CM&O) overhead costs must also be included within the PI-Managed Mission Cost...” Please confirm that CM&O does not need to be included in items that are not within the PIMMC such as Student Collaborations (SCs), TDOs, and SEOs.

A13: The CM&O costs related to incentives for SCs and TDOs and all costs for SEOs would be outside of the PIMMC but need to be included as part of the Enhanced PIMMC (E-PIMMC).

Q14: Please provide clarification as to when CSR Appendix L.4, Phase B Contract Implementation Data, is required to be provided to NASA.

A14: CSR Appendix L.4, Phase B Contract Implementation Data, may be included in the CSR submitted by July 7, 2021 if ready at that time. Alternatively, CSR Appendix L.4 may be

deferred to and submitted on the date of the concept study team's Site Visit, as described in the *Guidelines and Criteria for the Phase A Concept Study* document.

Q15: How will PI-Developed Enhancing TDOs be evaluated? Do the guidelines for SEOs in Section K also apply to TDOs?

A15: Any impact to the Baseline Science Mission due to inclusion of PI-Team-Developed Enhancing TDO(s) and/or SEO(s) will be evaluated in accordance with the factors listed in Part I of the latest *Guidelines and Criteria for the Phase A Concept Study* document (updated March 30, 2021). Separable elements of SEO(s) and/or Enhancing TDO(s) will be evaluated according to Factors B-7 and B-8, respectively. TMC feasibility of Enhancing TDO(s) will be evaluated using the same criteria as the Baseline Science Mission on a separate form. The Enhancing TDO and/or SEO evaluation will be provided to the Selection Official separate from the Baseline Science Mission evaluation and will not be included in the determination of the Baseline Science Mission risk.

Section E.7 and Requirement CS-25, and Section K and Requirement CS-78, are amended and expanded to include PI-Team-Developed Enhancing TDOs in the latest *Guidelines and Criteria for the Phase A Concept Study* document (updated March 30, 2021).

Q16: How many extra pages are allowed in the Concept Study Report for PI-Developed Enhancing Technology Demonstration Opportunities (TDOs)? The *Guidelines and Criteria for the Phase A Concept Study* document does not specify this.

A16: A 5-page limit for each SEO and/or Enhancing TDO is specified in Requirement CS-4 and the CSR Structure and Page Limits table (page 14) in the latest *Guidelines and Criteria for the Phase A Concept Study* document (updated March 30, 2021). These additional pages may only be used for the SEO and/or Enhancing TDO. **If more than one SEO and/or Enhancing TDO is proposed, a maximum of 10 pages total is allowed for each category. [Amended May 5, 2021]**

Q17: What command stack encryption is required for Category 2/Class C missions proposed under the Helio 2019 MIDEX AO?

A17: Category 2/Class C missions without propulsion that are proposed under the Helio 2019 MIDEX AO are not exempt from command stack encryption requirements. However, missions may propose options for tailoring of requirements for further discussion with the NASA

Explorers Program Office, if they are down-selected. Space Systems Protection Requirement 1 (SSPR 1) is contained in the *Space Systems Protection Standard*, NASA-STD-1006, posted in the Helio 2019 MIDEX Program Library. SSPR 1 states that “Programs/projects shall protect the command stack with encryption that meets or exceeds the Federal Information Processing Standard (FIPS) 140, Security Requirements for Cryptographic Modules.” SSPR 1 also states that “This requirement may be tailored to accommodate the nature of the mission ...”, and then suggests tailoring for use by applicable missions. Regardless of proposed tailoring, detailed plans must address the protection of uplink commands using approaches compliant with FIPS 140-2 Level 1, and impacts to the project must be quantified. Clarified Space System Protection tailoring guidance is provided in Appendix L.20 and Requirement CS-106 in the latest *Guidelines and Criteria for the Phase A Concept Study* document (updated March 30, 2021).

Q18: What are the standard launch vehicle adapters and separation systems that are offered in this AO? What would be the cost of a non-standard separation system?

A18: The *Launch Services Program Information Summary*, posted in the Helio 2019 MIDEX Program Library, describes three LV scenarios offered in the Helio 2019 MIDEX AO NASA-LSP Baseline launch service. The baseline separation system included in all three LV scenarios is the 47-inch (1194 mm) separation system. A launch vehicle adapter is not included for Scenarios 1 and 2. Scenario 3 typically includes a C22 launch vehicle adapter. If a separation system that is different than the 47-inch (1194 mm) separation system is proposed **as a non-standard service for the LSP procurement**, ~~then~~ a cost of \$1.2M should be carried in the PIMMC to be compatible with all three LV scenarios. **Study teams providing the LV adapter and complete separation system to interface with the LSP-provided LV would not be subjected to the \$1.2M fee. [Amended April 20, 2021]**

Q19: Requirement CS-6 requires submittal of the CSR via NASA NOMAD Large File Transfer (LFT). With the announced termination of LFT on June 1st, 2021, is an amendment to Requirement CS-6 forthcoming providing new direction?

A19: Yes, the MIDEX *Guidelines and Criteria for the Phase A Concept Study* document will be amended to require CSRs be submitted via a secure link to the NASA Box service. **To submit CSRs through Box, investigation teams must provide an email list of no more than three (3) individuals requiring access to Box to submit proposals. This email list must be provided to the Program Scientist no less than seven calendar days before the CSRs are due. Individuals on the list will then receive an emailed invitation with a secure link to Box from NASA. Investigation teams are encouraged to submit a test file using the secure link to Box to ensure functionality prior to CSR submittal. [Amended June 8, 2021]**

Q20: What is the duration for the First Bridge Phase for projects continued beyond Phase A concept studies? The MIDEX *Guidelines and Criteria for the Phase A Concept Study* document states that a two-month priced option will be executed by NASA for the First Bridge Phase.

A20: The duration of the First Bridge Phase for Phase B has been extended from two months to three months to allow additional time to complete the contract action. NASA will execute a three-month priced option for projects continued beyond Phase A concept studies. The MIDEX *Guidelines and Criteria for the Phase A Concept Study* document will be amended to reflect the change.
